September 16, 2010

EPA NEW ENGLAND'S TMDL REVIEW

TMDL: **New Hampshire Statewide Bacteria TMDL**
HUC: Multiple, statewide
2008 303(d) list: recreational and shellfish harvesting use impairment; 2008-2010 TMDL development.

STATUS: Final

IMPAIRMENT/POLLUTANT: Recreational use and shellfish harvesting use impairments are based on bacteria criteria for freshwater Classes A and B, and tidal water Classes A and B. Sources include both point and nonpoint sources. TMDLs are established in terms of concentrations and daily loads for Eschericia Coli (freshwaters), Enterococcus (saltwater beaches), and fecal coliform (shellfish harvesting areas), depending on resource type and waterbody classification.

BACKGROUND: The New Hampshire Department of Environmental Services (NHDES) submitted a draft TMDL on June 14, 2010. A public comment period was held from June 14 to July 23, 2010. NHDES submitted to EPA Region 1 the final *New Hampshire Statewide Bacteria TMDL* with a transmittal letter dated September 13, 2010. In addition to the main TMDL report itself, the submittal included the following documents (submitted on a compact disk):

- TMDL report Appendices A – O, Watershed Reports (site-specific bacteria data).
- TMDL report Appendix P, *TMDLs Expressed as Daily Loads*.
- TMDL report Appendix Q, *Furnace Brook Watershed-Based Restoration Plan*.
- TMDL report Appendix R, *Greenville Illicit Discharge Detection and Elimination (IDDE) Investigation.*
- TMDL report Appendix S, *Public Comments & NHDES Response*.
- Extensive list of best management practices and educational resources for stormwater management and source-specific discharges, Section 6 TMDL report.

The following review explains how the TMDL submission meets the statutory and regulatory requirements of TMDLs in accordance with § 303(d) of the Clean Water Act and EPA's implementing regulations in 40 CFR Part 130.

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REVIEW ELEMENTS OF TMDLs

Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 C.F.R. § 130 describe the statutory and regulatory requirements for approvable TMDLs. The following information is generally necessary for EPA to determine if a submitted TMDL fulfills the legal requirements for approval under Section 303(d) and EPA regulations, and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation.

1. Description of Waterbody, Pollutant of Concern, Pollutant Sources and Priority Ranking

The TMDL analytical document must identify the waterbody as it appears on the State/Tribe's 303(d) list, the pollutant of concern and the priority ranking of the waterbody. The TMDL submittal must include a description of the point and nonpoint sources of the pollutant of concern, including the magnitude and location of the sources. Where it is possible to separate natural background from nonpoint sources, a description of the natural background must be provided, including the magnitude and location of the source(s). Such information is necessary for EPA's review of the load and wasteload allocations which are required by regulation. The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as: (1) the assumed distribution of land use in the watershed; (2) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources; (3) present and future growth trends, if taken into consideration in preparing the TMDL; and, (4) explanation and analytical basis for expressing the TMDL through surrogate measures, if applicable. Surrogate measures are parameters such as percent fines and turbidity for sediment impairments, or chlorophyll a and phosphorus loadings for excess algae.

A. Description of Waterbody, Priority Ranking, and Background Information

The TMDL document addresses a total of 379 bacteria-impaired segments (394 impairments – some segments are impaired for more than one type of bacteria) listed in New Hampshire's 2008 303(d) list, including 204 river and stream segments, 100 lake and pond segments, 33 estuarine segments, 28 impoundment segments, and 14 ocean segments (page 3 TMDL report). These 379 segments are located in 15 of New Hampshire's 17 major watersheds (8-digit hydrologic unit code basins). Table 1-2 of the TMDL document lists each impaired water segment (organized by major watershed), including each waterbody's assessment unit identifier, waterbody type, segment name and location, and type of impairment.

State-wide maps as well as the lists of impaired waterbodies and locations are presented in the main body of the TMDL report, and site-specific maps and data are provided in the appendices (appendices are organized by major watershed). While bacteria impairments are spread throughout much of the state, the vast majority are concentrated in the coastal areas and the more populated southern half of the state. New Hampshire's 2008 303(d) list indicates priority dates for the 379 segments ranging from 2013 to 2021; however NHDES considers these segments high priority, and the draft 2010 list revised the TMDL completion date to 2010 for all bacteria-impaired segments.

B. Pollutant of Concern

The bacteria impairment listings are based on monitoring data for various indicator organisms, depending on the resource type, and classification of the waterbody. Freshwater rivers and streams are listed for the presence of Eschericia Coli (E. coli). Estuarine and ocean waters are listed for fecal coliform, in accordance with New Hampshire's bacteria criteria for the protection

of shellfish harvesting areas. Estuarine and ocean waters with recreational use impairment are listed for enterococcus (see Section 2 below).

C. Pollutant Sources

Potential point sources of bacterial pollution include: wastewater discharges from treatment facilities, NPDES regulated stormwater (including stormwater discharges authorized by MS4 permits, the construction general permit, and the multi-sector general permit), accidental and illicit discharges, combined sewer overflows, and discharges from boats. Potential non-point sources of bacterial pollution include stormwater not regulated under the NPDES program, septic systems, pet waste, wildlife wastes, agriculture, and recreational uses (swimmers). Actual segment-specific sources of bacterial pollution are identified in the watershed appendices (in some cases) when these sources are known.

Assessment: EPA Region 1 concludes that the TMDL document meets the requirements for describing the TMDL waterbody segments, pollutants of concern, and priority ranking, and identifying and characterizing sources of impairment.

In addition, EPA notes that this TMDL document may apply to waters found to be impaired by bacteria in the future, provided that NHDES' intent to add more impaired waters to the TMDL is made clear, the public has an opportunity to provide comments, and EPA approves the proposed additional TMDLs. In appropriate circumstances in the future, NHDES may submit additional TMDLs to EPA for specific waterbodies to be added for coverage under the statewide bacteria TMDL document. The State will need to either provide public notice for review of the additional TMDLs alone, or as part of the public notice process associated with the biannual review of the State's Section 303(d) list in the its *Integrated Water Quality Report* (as suggested on page 5 of the TMDL document). Within the Integrated Report and in its public notice requesting review and comment, NHDES will need to clearly state its intent to list the newly assessed waterbodies as impaired and to apply the appropriate waterbody-specific bacteria TMDLs. The State will not need to resubmit the approved Core document at such times. Rather, it should reference the document and update certain waterbody-specific information contained in this original core document in the introductory materials of its submission. NHDES should also provide the same type of detailed information on the additional impaired waterbodies and their TMDLs as are contained in the appendices that accompany this original submission.

2. Description of the Applicable Water Quality Standards and Numeric Water Quality Target

The TMDL submittal must include a description of the applicable State/Tribe water quality standard, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the antidegradation policy. Such information is necessary for EPA's review of the load and wasteload allocations which are required by regulation. A numeric water quality target for the TMDL (a quantitative value used to measure whether or not the applicable water quality standard is attained) must be identified. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, usually site specific, must be developed from a narrative criterion and a description of the process used to derive the target must be included in the submittal.

The TMDL report defines the appropriate water quality criteria for reducing public health risk from waterborne disease-causing organisms, for protecting designated uses (including recreational and shellfish growing areas), and for implementing the antidegradation policy (pages

16-19 TMDL report). Water quality classification and water quality standards of all surface waters of the State of New Hampshire have been established by the New Hampshire Legislature at RSA 485-A:8, I, II, and V. and the New Hampshire surface water regulations (Env-Wq 1700).

According to New Hampshire's water classification program, bacteria-impaired waters are classified as A or B with the majority of waters being Class B. Escherichia coli (E. coli) is the indicator organism for fresh water, Enterococcus is the indicator organism for recreational use in tidal waters, and fecal coliform is the indicator organism for shellfish growing and harvesting areas (tidal waters) following the standards developed under the National Shellfishing Sanitation Program (NSSP) by the United States Food and Drug Administration. Shellfish growing and harvesting areas are approved by the NHDES, using criteria established in accordance with the National Shellfish Program Manual of Operation of the NSSP.

New Hampshire's water quality criteria for bacteria are used as the numeric water quality targets for the bacteria TMDLs (page 19 of TMDL report). The numeric targets vary depending on the specific waterbody's use (e.g., recreation or shellfish consumption), waterbody classification (A or B), whether it is designated beach, and whether it is fresh or tidal surface water. The criteria used as water quality targets are listed in Tables 2-2 and 2-3 of the TMDL report.

Since New Hampshire's water quality standards for recreational uses include criteria for both instantaneous bacteria counts and geometric means of bacteria data, TMDL targets are provided for both types of criteria. For shellfish harvesting areas, TMDL targets are provided for both the geometric mean and the 90^{th} percentile statistical measure (variability standard).

Assessment: EPA concludes that New Hampshire DES has properly described and interpreted the applicable water quality standards (in Section 2 of the TMDL document) to set the TMDL targets. New Hampshire DES is directly applying the numeric criteria in its water quality standards to derive the TMDL targets.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

As described in EPA guidance, a TMDL identifies the loading capacity of a waterbody for a particular pollutant. EPA regulations define loading capacity as the greatest amount of loading that a water can receive without violating water quality standards (40 C.F.R. § 130.2(f)). The loadings are required to be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. § 130.2(i)). The TMDL submittal must identify the waterbody's loading capacity for the applicable pollutant and describe the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In most instances, this method will be a water quality model. Supporting documentation for the TMDL analysis must also be contained in the submittal, including the basis for assumptions, strengths and weaknesses in the analytical process, results from water quality modeling, etc. Such information is necessary for EPA's review of the load and wasteload allocations which are required by regulation.

In many circumstances, a critical condition must be described and related to physical conditions in the waterbody as part of the analysis of loading capacity (40 C.F.R. § 130.7(c)(1)). The critical condition can be thought of as the "worst case" scenario of environmental conditions in the waterbody in which the loading expressed in the TMDL for the pollutant of concern will continue to meet water quality standards. Critical conditions are the combination of environmental factors (e.g., flow, temperature, etc.) that results in attaining and maintaining the water quality criterion and has an acceptably low frequency of occurrence. Critical conditions are important because they describe the factors that combine to cause a violation of water quality standards and will help in identifying the actions that may have to be undertaken to meet water quality standards.

New Hampshire's bacteria TMDLs consist of two formats of targets for allowable levels of bacteria: (1) concentrations of bacteria, expressed as bacteria counts/100 ml of water, and (2) loads of bacteria, expressed as billions of bacteria/day (pages 33-36 and Appendix P of the TMDL report). New Hampshire DES considers both formats to be daily targets because the targets apply on any given day whenever the water quality standards are in effect in order to assure achievement of bacteria water quality criteria. Both formats express targets designed to attain the designated uses of swimming and shellfishing, and to meet the associated criteria in New Hampshire's water quality standards. New Hampshire DES considers the concentration-based TMDL targets to be most useful for guiding implementation of bacteria controls because those targets are easy to understand, and achievement of those targets is more readily assessed by groups with limited resources (pages 33-34 of the TMDL report).

New Hampshire's water quality criteria for bacteria apply year round at all times. By setting the TMDL targets equal to the bacteria criteria, the TMDLs are also applicable at all times and are therefore protective of water quality under all conditions and seasons.

These TMDLs set a goal of meeting bacteria water quality criteria at the point of discharge for all sources in order to meet water quality standards throughout the waterbody. Achievement of the goal will be assessed by ambient water quality monitoring.

During the public comment period, a commenter questioned whether, in the case of interstate waters, meeting the NHDES criteria would be sufficient to allow downstream waters in adjoining states such as Massachusetts to also meet applicable bacteria standards, given that some adjacent states have more stringent bacteria standards than New Hampshire. NHDES indicated in response (see page 16 of Appendix S) that even though adjoining states may have slightly lower criteria, the NH TMDLs are not expected to cause a violation of criteria in downstream waters across state borders. This is because concentration based TMDLs are conservatively based on sources meeting ambient bacteria concentration standards (or less) with no allowance for dilution or bacteria die-off – two factors that will unquestionably result in bacteria concentrations in receiving waters being lower than concentrations at the point of discharge (see Sections 5.2 and 5.4 of the TMDL report). Furthermore, for the adjacent state identified most prominently by the commenter (Massachusetts) the geometric mean criterion for E. coli (126 cts/100mL) for Class B waters is actually the same as New Hampshire's geometric mean criterion for Class B waters. This is very significant, as EPA guidance[1] recommends that the geometric mean component of bacteria criteria be the main criteria used for attainment determinations in the context of the 303(d) listing process.

Assessment: There is nothing in EPA's regulations that forbids expression of a TMDL in terms of multiple TMDL targets. TMDLs can be expressed in various ways, including in terms of toxicity, which is a characteristic of one or more pollutants, or by some "other appropriate measure" (40 C.F.R. §130.2(i)). The target loading capacities expressed in the TMDL document are set at levels which assure WQS will be met (criteria at point of discharge, and loading based on meeting ambient water quality criteria). The concentration loading capacity is based on the concentration criteria for each water body. If all sources of pathogens are at or below the water quality criteria, then it follows that the receiving water will meet the WQS for bacteria.

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1 Water Quality Standards for Coastal Recreation Waters: Using Single Sample Maximum Values in State Water Quality Standards. USEPA Office of Water. EPA-823-F-06-013. August 2006.

Both formats (concentration and load) express targets designed to attain the designated use of each waterbody segment based on a straightforward derivation of TMDL targets from the water quality criteria adopted by New Hampshire. Both formats will achieve water quality criteria for both dry and wet weather and for all storm events whenever they occur (i.e., on any given day). These approaches have been used by states for TMDL development and approved by EPA in the past.

EPA's November 15, 2006 guidance entitled "Establishing TMDL 'Daily' Loads in Light of the Decision by the U.S. Court of Appeals for the D.C. Circuit in Friends of the Earth, Inc. v. EPA, et al., No.05-5015, (April 25, 2006) and Implications for NPDES Permits," recommends that TMDL submittals express allocations in terms of daily time increments. In this case, the daily maximum mass loads were calculated by multiplying the concentration criterion by stream flow or waterbody volume (lakes and estuaries) and are expressed in terms of billions of organisms per day.

In summary, the loading capacity targets (both concentration and load-based) are directly linked to New Hampshire's water quality standards' bacteria criteria to achieve the designated uses of the waterbodies addressed by this TMDL report. In addition, EPA concludes that the TMDLs have been established conservatively at levels sufficient to protect downstream waters that cross state borders, even when bacteria criteria in adjacent states are lower than New Hampshire's.

4. Load Allocations (LAs)

EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity allocated to existing and future nonpoint sources and to natural background (40 C.F.R. § 130.2(g)). Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. § 130.2(g)). Where it is possible to separate natural background from nonpoint sources, load allocations should be described separately for background and for nonpoint sources.

If the TMDL concludes that there are no nonpoint sources and/or natural background, or the TMDL recommends a zero load allocation, the LA must be expressed as zero. If the TMDL recommends a zero LA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero LA implies an allocation only to point sources will result in attainment of the applicable water quality standard, and all nonpoint and background sources will be removed.

The load allocation (LA) relates to existing and future nonpoint sources, natural background, and stormwater runoff not subject to NPDES permitting. LAs are allocated based on the criteria established by New Hampshire's water quality standards, or are set at zero for prohibited discharges (see Tables 5-1, 5-2, and 5-3 on pages 34-37 of the TMDL report). For example, LAs for non-MS4 stormwater are established for Class A and B waters at designated beaches at 47/100 ml for the geometric mean of E. coli and 88/100 ml instantaneous, or "as naturally occurs" if the only source is wildlife.

Assessment: As discussed in Section 3 of this document (under loading capacity), New Hampshire DES used the applicable numeric water quality criteria directly related to the use-impairment which the TMDL is designed to address. As discussed in Section 6 of this document (under margin of safety), New Hampshire DES set conservative targets based on meeting criteria

at the point of source discharge; the aggregate mass load allocation is derived from the applicable criteria and flow. EPA concludes that the load allocations for bacteria are adequately specified in the TMDLs at levels necessary to attain and maintain water quality standards.

5. Wasteload Allocations (WLAs)

EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to existing and future point sources (40 C.F.R. § 130.2(h)). If no point sources are present or if the TMDL recommends a zero WLA for point sources, the WLA must be expressed as zero. If the TMDL recommends a zero WLA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero WLA implies an allocation only to nonpoint sources and background will result in attainment of the applicable water quality standard, and all point sources will be removed.

In preparing the wasteload allocations, it is not necessary that each individual point source be assigned a portion of the allocation of pollutant loading capacity. When the source is a minor discharger of the pollutant of concern or if the source is contained within an aggregated general permit, an aggregated WLA can be assigned to the group of facilities. But it is necessary to allocate the loading capacity among individual point sources as necessary to meet the water quality standard.

The TMDL submittal should also discuss whether a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur. In such cases, the State/Tribe will need to demonstrate reasonable assurance that the nonpoint source reductions will occur within a reasonable time.

As with the load allocations (LAs), the wasteload allocations (WLAs) are also allocated based on the criteria established by New Hampshire's water quality standards in Tables 5-1, 5-2, and 5-3 (pages 35-36 TMDL report). For example, point sources such as combined sewer overflows (CSOs), and confined animal feeding operations (CAFOs) are listed in the TMDL allocation tables as "NPDES Non-Stormwater" and are prohibited for Class A waters but are allocated at the criteria level of the appropriate indicator organism for Class B waters. Specific TMDL end points are listed for each impaired waterbody in Appendices A-O of the TMDL document, and percent reduction requirements for each waterbody are listed in Table 8-1 of the core TMDL document.

Assessment: New Hampshire DES established concentration-based WLAs by applying the numeric criteria directly to each discharge. Aggregate mass WLAs were established for the stormwater sources because it is impossible to determine with any precision or certainty the actual and projected loadings for individual discharges or groups of discharges. EPA's November 22, 2002 TMDL guidance suggests that it is acceptable in such cases to allocate stormwater by gross allotments. EPA concludes that the wasteload allocation components of the TMDLs are adequately specified at levels necessary to attain and maintain water quality standards.

6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include a margin of safety to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA § 303(d)(1)(C), 40 C.F.R. § 130.7(c)(1)). EPA guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for

the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

The New Hampshire bacteria TMDLs provide two types of margins of safety (MOS) depending on the TMDL format (page 37, TMDL report). The TMDLs expressed as concentration include an implicit MOS using conservative assumptions during the TMDL analysis. First, the TMDL targets are established at the same levels as the water quality standards for each waterbody, and do not rely on in-stream processes, such as bacteria die-off, dilution, and settling, which are known to reduce in-stream bacteria concentrations. Given this very conservative TMDL target-setting, there is a high level of confidence that the TMDLs established are consistent with water quality standards, and the entire loading capacity can be allocated among sources. The underlying assumption in establishing a concentration TMDL for bacteria is that if all sources are equal to or below the water quality standards, then the concentration of bacteria in the receiving water will attain standards.

The TMDLs expressed in terms of daily loads include an explicit 10% MOS which is applied to the appropriate state water quality criteria (SWQC) before calculating the allowable daily load and wasteload allocations for bacteria (for both instantaneous and geometric mean criteria). The mass-per-unit-time bacteria TMDLs are expressed in terms of billions of bacteria per day as a function of flow (for freshwater streams) or volume (for freshwater lakes, and estuarine and marine waters). This 10% MOS is incorporated into the TMDLs in order to account for any uncertainty involved in measurements or estimations of waterbody flow or volume used in the daily load calculations. Formulas, tables and graphs for calculating the TMDL for any flow or volume are provided in Appendix P of the TMDL.

Assessment: EPA concludes that the approach used in developing the concentration-based TMDLs provides for an adequate implicit MOS. There is not a lack of knowledge concerning the relationship between allocations and water quality in this case, where the TMDL applies the criteria as allocations for each source. Setting the concentration TMDL targets at the water quality criteria with no allowance for in-stream bacteria die-off and settling provides an implicit margin of safety. EPA also concludes that the approach used in developing the load-based TMDLs provides for an adequate explicit MOS in order to account for any uncertainty associated with measuring flows or estimating volumes.

7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The method chosen for including seasonal variations in the TMDL must be described (CWA § 303(d)(1)(C), 40 C.F.R. § 130.7(c)(1)).

New Hampshire DES considered seasonal variations when developing the TMDL document. Because the TMDLs are set equal to the bacteria criteria, and the criteria are applicable at all times of year, the TMDLs are also applicable at all times of year and protective during all conditions.

Assessment: The bacteria TMDLs apply over the entire time that the bacteria criteria apply, which is year round in New Hampshire . The TMDL targets will reduce bacteria concentrations to water quality criteria levels in all seasons. EPA concludes that the TMDLs have adequately addressed seasonal variability.

8. Monitoring Plan

EPA's 1991 document, Guidance for Water Quality-Based Decisions: The TMDL Process (EPA 440/4-91-001), and EPA's 2006 guidance, Clarification Regarding "Phased" Total Maximum Daily Loads, recommend a monitoring plan when a TMDL is developed using the phased approach. The guidance indicates that a State may use the phased approach for situations where TMDLs need to be developed despite significant data uncertainty and where the State expects that the loading capacity and allocation scheme will be revised in the near future. EPA's guidance provides that a TMDL developed under the phased approach should include, in addition to the other TMDL elements, a monitoring plan that describes the additional data to be collected, and a scheduled timeframe for revision of the TMDL.

The New Hampshire statewide bacteria TMDL report is not a phased TMDL document, but the document includes a description of a monitoring plan designed to measure attainment of water quality standards (pages 39-40 TMDL report). NHDES will continue to monitor rivers and streams through its Ambient Monitoring Program, and will continue the Beach Inspection Program, which collects bacteria samples from recreational beaches to determine safe swimming conditions. The NHDES Shellfish Program will continue year-round monitoring of shellfish areas to assure their proper classification. The NHDES will also continue to investigate complaints and inspect potential sources of bacteria. To supplement these efforts, NHDES will continue to make use of the substantial bacteria data from quality assured volunteer monitoring programs to indicate problems and to evaluate progress towards attainment of standards.

Assessment: EPA concludes that the anticipated monitoring by and in cooperation with New Hampshire DES is sufficient to evaluate the adequacy of the TMDL and attainment of water quality standards, although this is not a required element of EPA's TMDL approval process.

9. Implementation Plans

On August 8, 1997, Bob Perciasepe (EPA Assistant Administrator for the Office of Water) issued a memorandum, "New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs)," that directs Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired solely or primarily by nonpoint sources. To this end, the memorandum asks that Regions assist States/Tribes in developing implementation plans that include reasonable assurances that the nonpoint source load allocations established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. The memorandum also includes a discussion of renewed focus on the public participation process and recognition of other relevant watershed management processes used in the TMDL process. Although implementation plans are not approved by EPA, they help establish the basis for EPA's approval of TMDLs.

The TMDL report provides implementation guidance and identifies existing informational resources on BMPs for the various sources of bacteria (Section 6 TMDL report). It also includes an overall description of the implementation process, and provides two examples of the type of more detailed implementation plans (Appendices Q and R) that are encouraged to be developed where applicable as the next step following TMDL adoption. Maps and site-specific data summary tables are presented in Appendices A-O to inform stakeholders on the location of known impairments. Data were used to calculate percent reductions needed to meet the concentration-based target, and to present wet weather and dry weather bacteria counts (where sufficient precipitation data were available). This wet/dry data analysis provides valuable indications of the sources of bacteria in order to guide implementation efforts to fix the problem.

Assessment: Although implementation plans are not a required element for TMDL approval, New Hampshire DES has included implementation guidance and identified many resources to aid implementation. EPA is taking no action on the implementation plan.

10. Reasonable Assurances

EPA guidance calls for reasonable assurances when TMDLs are developed for waters impaired by both point and nonpoint sources. In a water impaired by both point and nonpoint sources, where a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur, reasonable assurance that the nonpoint source reductions will happen must be explained in order for the TMDL to be approvable. This information is necessary for EPA to determine that the load and wasteload allocations will achieve water quality standards.

In a water impaired solely by nonpoint sources, reasonable assurances that load reductions will be achieved are not required in order for a TMDL to be approvable. However, for such nonpoint source-only waters, States/Tribes are strongly encouraged to provide reasonable assurances regarding achievement of load allocations in the implementation plans described in section 9, above. As described in the August 8, 1997 Perciasepe memorandum, such reasonable assurances should be included in State/Tribe implementation plans and "may be non-regulatory, regulatory, or incentive-based, consistent with applicable laws and programs."

The TMDL targets for point sources in these TMDLs are not less stringent based on any assumed nonpoint source reductions, so documentation of reasonable assurance in the TMDLs is not a requirement. Nonetheless, New Hampshire DES explains that a combination of regulatory and non-regulatory program support in New Hampshire will provide reasonable assurances that both point and non-point allocations will be achieved, including regulatory enforcement, technical assistance, availability of financial incentives, and state, and federal programs for pollution control (pages 40-42 TMDL report).

Assessment: Although not required, because New Hampshire DES did not increase WLAs based on expected LA reductions, New Hampshire DES has nevertheless described a number of programs that provide reasonable assurance that WQS will be met.

11. Public Participation

EPA policy is that there must be full and meaningful public participation in the TMDL development process. Each State/Tribe must, therefore, provide for public participation consistent with its own continuing planning process and public participation requirements (40 C.F.R. § 130.7(c)(1)(ii)). In guidance, EPA has explained that final TMDLs submitted to EPA for review and approval must describe the State/Tribe's public participation process, including a summary of significant comments and the State/Tribe's responses to those comments. When EPA establishes a TMDL, EPA regulations require EPA to publish a notice seeking public comment (40 C.F.R. § 130.7(d)(2)).

Inadequate public participation could be a basis for disapproving a TMDL; however, where EPA determines that a State/Tribe has not provided adequate public participation, EPA may defer its approval action until adequate public participation has been provided for, either by the State/Tribe or by EPA.

The public participation process for the bacteria TMDLs is described on pages 38-39 of the TMDL report. On June 14, 2010, a public notice announcing the availability of the draft TMDL for public review and comment was posted on the DES website. DES also notified by email the 144 Cities/Towns where the impaired waterbodies in this TMDL are located, the Lake and/or Watershed Associations (where applicable), of the availability of the draft report. On this date,

NHDES also notified by email a large number of additional organizations and entities, including conservation commissions, conservation districts, environmental organizations, a variety of state, local and federal government entities, the NH Farm Bureau, and the NH Business and Industry Association (see page 38 of the TMDL report for the full list). The public comment period ended on July 23, 2010. A complete list of all comments received and the NHDES responses to those comments can be found in Appendix S of the TMDL report.

Assessment: EPA concludes that NHDES has provided sufficient opportunities for the public to comment on the TMDL, and has provided reasonable responses to the public comments.

12. Submittal Letter

A submittal letter should be included with the TMDL analytical document, and should specify whether the TMDL is being submitted for a technical review or is a final submittal. Each final TMDL submitted to EPA must be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under Section 303(d) of the Clean Water Act for EPA review and approval. This clearly establishes the State/Tribe's intent to submit, and EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final submittal, should contain such information as the name and location of the waterbody, the pollutant(s) of concern, and the priority ranking of the waterbody.

Assessment*:* On September 13, 2010, NHDES submitted New Hampshire's final Statewide Bacteria TMDL and associated appendices for EPA approval. The final documents contained all of the elements necessary to approve the TMDL.